ATTACHMENT B

BEFORE THE
UNITED STATES OF AMERICA
DEPARTMENT OF THE INTERIOR
MINERALS MANAGEMENT SERVICE

FURTHER SUPPLEMENTARY PROPOSED RULE FOR ESTABLISHING OIL VALUE FOR ROYALTY DUE ON FEDERAL LEASES

COMMENTS OF VASTAR RESOURCES, INC.

Affidavit of

Adam B. Jaffe

I INTRODUCTION AND BACKGROUND

My name is Adam B. Jaffe. My business address is 35 Cypress St., Brookline, MA 02445. I am submitting this Affidavit on behalf of Vastar Resources, Inc. ("Vastar") as part of Vastar's comments on the Further Supplementary Proposed Rule for Establishing Oil Value for Royalty Due on Federal Leases, published by the Minerals Management Service ("MMS") of the Department of the Interior ("DOI") on December 30, 1999 ("Proposed Rule").

I am a Professor of Economics at Brandeis University in Waltham, Massachusetts. Prior to joining the Brandeis faculty in 1994, I was on the faculty of Harvard University. During academic year 1990-91, I took leave from Harvard to serve as Senior Staff Economist at the President's Council of Economic Advisers in Washington, D.C. In that capacity, I had primary staff responsibility for supporting the Chairman and Members of the Council in the areas of energy policy and technology

policy, and was actively involved in the formulation of the 1991 *National Energy Strategy*.

I have served as a consultant to a varicty of businesses and government agencies on economic matters. I have provided written and oral testimony before the Federal Energy Regulatory Commission ("FERC") and the public utility commissions of Connecticut, Utah, New Hampshire, and Texas on issues relating to gas and oil pipeline tariffs and rate-making methodology, as well as competition and market power in the electricity, gas pipeline, and oil pipeline sectors. At Brandeis and Harvard, I have taught graduate and undergraduate courses in microeconomics, industrial organization, and the economics of antitrust and regulation. I am a member of the Board of Editors of the *American Economic Review*. My *curriculum vitae* is attached as Exhibit ABJ-1.

I have been asked by Vastar to comment on issues related to the appropriateness and reasonableness of various methodologies that may be employed for the purpose of determining transportation allowances to be used for royalty payments from federal leases. Vastar Resources, Inc., is an independent, non-integrated oil company that has recently acquired additional production assets in the Gulf of Mexico formerly owned by various Mobil Oil Corporation entities. These assets are now owned by either Vastar or its subsidiaries, Vastar Offshore Inc. and Vastar Pipeline Company. Vastar or its affiliates acquired Mobil's interests in a number of offshore pipeline systems in the Gulf of Mexico. These include: High Island Pipeline System, Bonito Pipeline, Pelto 10 Pipeline, South Timbalier 53 Pipeline, Ewing Bank 826 Pipeline, and East Cameron 46 Pipeline.[1]

[1] Vastar currently owns 19% of the High Island Pipeline System, 6% of the Bonito Pipeline, 50% of the Pelto 10 Pipeline, 50% of the South Timbalier 53 Pipeline, 40% of the Ewing Bank 826 Pipeline, and 5% of the East Cameron 46 Pipeline.

II SUMMARY OF FINDINGS

It is my understanding that the Proposed Rule includes a methodology by which the allowance for transportation costs for moving crude oil from federal leases in non-arm's-length transactions is different from that for arm's-length transactions. Although the precise transportation allowance calculation depends on the conditions and factual situation of each pipeline, the same basic principle should apply in all cases: *the cost of pipeline transportation services is the market price for such services, which can be measured by observation of the price paid for transportation services in arm's-length but otherwise similar transactions.* The basis for this and related conclusions is set forth in detail in this Affidavit, and summarized below:

- the economic function of the transportation allowance is to produce a royalty that replicates, as closely as is possible, the royalty that would be paid if the resource were sold in a competitive market at the lease;

- if the downstream markets in which the resource is sold are themselves reasonably competitive, a royalty based on the downstream sales price, minus the market price for transportation and other downstream services provided before the initial sale, provides the closest possible approximation to the ideal royalty based on competitive sale at the lease;

- comparable transportation transactions between unaffiliated parties ("arm's-length transactions"), where available, constitute the best indicator of market price for services such as pipeline transportation;

- there is no coherent rationale for establishing different allowances for pipeline transportation services based solely on changes in ownership of those assets;

- in circumstances where no comparable arm's-length transactions can be identified, the next-best alternative is to calculate the transportation allowance on the basis of the economic cost of providing transportation, which includes an appropriate cost of capital and the cost of taxes paid; and

- a policy that imposes transportation allowances for affiliated transportation that are lower than the allowances permitted in similar circumstances where non-affiliated transportation is used is inefficient, will increase the cost of resource production and transportation, and will inhibit the long-run development of the relevant natural resource.

III THE IMPORTANCE OF MARKET VALUATION

If all crude oil produced from federal leases were sold outright at the lease, then the subsequent cost of transporting that oil would be of no relevance to royalty calculation. In some cases, however, the first outright sale of crude oil occurs at some point downstream of the lease such as at a refinery or a market center. Market forces dictate that the market price in these downstream markets reflect the value of the oil at the lease plus the cost of transportation (and any other services) necessary to get the oil to the point of first sale. Equivalently, from an economic perspective, the value of the oil at the lease is its value in a competitive downstream market[2] minus the cost of getting the oil to that market. This means that a royalty based on the value of the resource when produced must be calculated with reference to the sales price minus the cost of transportation.

Fundamentally, the issue I am addressing in this proceeding is about the meaning of the word "cost" in the previous sentence. There is no dispute that, in cases where the lessee purchases transportation services at arm's length, the royalty is determined by the sales price minus the price paid in that arm's-length transaction for transportation. What is at issue is the appropriate method for determining the "cost" of transportation where that transportation is provided by the lessee or a

[2] The marketplace for crude oil itself is supplied by multiple sources, both domestic and international, and is populated by literally thousands of producers, traders, and brokers engaged in the practice of buying and selling the crude oil on a commodity basis.

corporate affiliate of the lessee. The appropriate answer to this question must be derived from the underlying economic purpose of the transportation deduction: to give the lessor the appropriate share of the value of the oil at the lease.

This perspective makes clear that the allowance must be equivalent to the real economic cost of the transportation service, and cannot be calculated in a way that is sensitive to arbitrary accounting conventions or cost-irrelevant differences in the manner in which the service is provided. In particular, it is clear that a mechanical association of "cost" with accounting cost or "out-of-pocket" cost can lead to nonsensical results. To illustrate this, consider the following (admittedly unrealistic) hypothetical: a lessee is a sole proprietor, who picks up the oil at the lease and puts it in a barrel in the back of a boat that he built himself from scrap lumber. He then rows the barrel to shore and sells it. He has incurred no accounting or out-of-pocket cost for transportation, but he certainly has borne an economically significant cost. Or, more realistically, consider a situation in which two lessees in a given field each have a fractional interest in the same pipeline that connects the field to a market area. If each lessee ships its oil using the pipeline capacity of the other firm, we would observe an out-of-pocket cost equal to the tariff actually paid for that shipment. If, however, each lessee chooses instead to ship the oil on its own portion of the pipeline capacity, the out-of-pocket or accounting costs would depend on accounting conventions regarding depreciation, cost of capital, and so forth. But from an economic point of view, it is clear that the cost of the transportation ought to be invariant to these transactional alternatives.

Because the investments necessary to develop existing resources and transport them to market are largely sunk, the oil will probably not stop flowing if the MMS sets a transportation deduction smaller than the

amount corresponding to the market price for such transportation. But we should be clear about the economics of such a situation. Setting a transportation allowance below the market price for transportation would be economically equivalent to a confiscation by MMS of part of the economic returns associated with transportation investments, or, equivalently, a unilateral increase in the royalty rate itself.

In the long run, such an increase in the effective royalty would likely have adverse consequences on the development of MMS resources. Confiscating part of the economic return to transportation investments raises the cost of bringing oil to market. Increasing this cost would distort companies' supply, investment, and pricing decisions. If firms earn only below-market returns for engaging in post-production transportation, the resulting downward bias in business profitability reduces the incentive, on the margin, to invest in otherwise profitable resource development activities.

The possibility of distorted investment decisions is potentially a serious one in the Gulf of Mexico. Today, and in the foreseeable future, there is a large amount of investment activity taking place in that region. In 1998, the offshore Gulf region accounted for 20% of the production and 46% of the new field or new reservoir discoveries in the United States, including the State of Alaska.[3] In addition, much of this development is taking place in offshore, deepwater leases where the costs of development and potential risk factors are proportionately higher. While it is unlikely that failure to appropriately apply market prices to royalty transportation allowances would endanger all such development and production, it is clear that an artificially low allowance will reduce the expected and/or actual return from any particular development on

federal leases. On the margin, firms will be less likely to pursue otherwise efficient and profitable activities. These adverse outcomes can take many forms. For example, pipeline owners would face incentives to under-invest in future expansion, by either installing less capacity or declining to develop certain projects at all.

Failure to recognize the true economic cost of transportation services could have significant consequences for existing production as well. Given lower returns, a producer is more likely to shut down a marginally productive well or pipeline earlier than it would have done otherwise, resulting in lower overall resource production.

IV DETERMINING MARKET PRICE

If all transportation were provided by entities unaffiliated with lessees, it would be easy to determine the market price for transportation services simply by observing the price paid in these arm's-length transactions. In the real world, however, we find various degrees of vertical integration among firms. Vertical integration combines various links in the supply chain under a common corporate entity, often for the purposes of transactional efficiencies. Different firms can, and do, pursue a diverse range of vertical integration in the oil industry ranging from full integration from the lease to retail distribution (i.e., Exxon) to full dis-integration (i.e., a pure exploration and production company). This range of integration occurs because different firms choose to pursue different strategies given their particular assets, abilities, and expectations.

The flexibility to pursue these various strategies offers companies the opportunity to maximize profitability through increased efficiency

[3] Advance Summary, U.S. Crude Oil, Natural Gas, and Natural Gas Liquids Reserves: 1998 Annual Report, Energy Information Agency, U.S. Department of Energy, November

and productivity. Because natural resource values are diminished by the extent of the costs of getting the resource to market, it is in the interests of the owners of natural resources and the marketplace in general to maximize the efficiency of the vertical chain. This efficiency is maximized by allowing firms to choose whatever levels and varieties of vertical integration they find most efficient. Therefore, natural resource lessors should not collect royalties in ways that would tend to distort firms' incentives with respect to integration decisions. Any such distortion would only reduce efficiency and thereby reduce the value of the resources.

The fact of integration, however, raises the question of how to properly value transactions that occur between affiliated parties. Since the reported "price" for transactions between affiliates may not be determined by market forces, it is not necessarily a market price. The standard economic approach to dealing with this issue is to determine market price by looking to comparable non-affiliated transactions that take place outside of the vertically integrated company. A comparable transaction is one that is substantially similar with respect to relevant attributes. It is crucial to note, however, that for a transaction to be comparable does not require that it be exactly the same. Important information on market price can be gleaned from essentially similar transactions or ones where relevant differences can be accounted for through some process of adjustment. It is common, for example, for real estate or fine art appraisers to base value determinations on the sales price of similar but not identical houses or works of art.

The logic of this imputation is that the same market forces that drive similar or comparable arm's-length transactions also affect the transaction occurring between affiliates. These similar market forces

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would therefore tend to drive the market price for the affiliated transaction to the same level as the comparable arm's-length transactions. We can therefore be confident that a market price for a comparable transaction is telling us what the market price for the affiliated transaction would have been in the absence of the affiliate relationship. That is precisely what we wish to know in order to make an appropriate allowance for the "cost" of transportation in an affiliate transaction.

It is important to note that the problem of imputing or estimating a market price for affiliated transactions is not unique to the MMS, or even unique to natural resource leasing. There are numerous economic situations where one party is entitled to a share of the value of a transaction conducted by another party, but actual transactions occur in such a way that they are affected by or encompass other values or costs. There is no need for the MMS to "re-invent the wheel" by devising new procedures to deal with this problem. For example, the State of Alaska as a lessor of Alaska North Slope ("ANS") oil is in a position conceptually identical to that of the MMS in the Gulf: it is entitled to a royalty as a percent of lease value, but virtually none of the oil is sold at the lease. It is transported on the Trans-Alaska Pipeline System ("TAPS") to Valdez. TAPS is owned in shares by some of the North Slope lessees and other parties, in undivided interests. In calculating the North Slope "netback" price for ANS, Alaska accepts the use of the average TAPS tariff, without reference to whether shipment was made via an affiliated pipeline owner or not.

Another analogous situation is created by the need to value tanker transportation services to calculate the income of U.S. oil companies derived from the importation of foreign crude oil. For this purpose, the

IRS relies on a published index of world tanker rates.[4] More generally, multinational corporations' tax payments to the U.S. government depend on the income earned in the U.S. The calculated U.S.-source income is sensitive to the "transfer price" at which a U.S. company "buys" goods or services from affiliated companies overseas. The Internal Revenue Service understands well that these "transfer prices" or affiliated prices might be manipulated by companies to minimize their tax burden. Hence the IRS *requires* that the transfer prices be based on arm's-length transactions for comparable goods or services in order to accurately reflect taxable income. The IRS *does not* require companies to document the production cost of the transferred goods; indeed, accounting-based cost figures can be utilized only to the extent that they are consistent with values in comparable, arm's-length market transactions and when valid information on arm's-length comparables is not available.[5]

V APPROPRIATE COMPARISONS

Vastar's own situation in the Gulf of Mexico is helpful in illustrating some appropriate comparisons that can be used to determine the market price of non-arm's-length transportation. In the Gulf, there are a large number of production and pipeline owners in addition to Vastar. This situation creates a number of opportunities for observing the market price for transportation service. Each of the alternatives

[4] Internal Revenue Service. (4/7/99). Chapter 7: Use of Average Freight Rate Assessments (AFRA). In: Handbook 4.4.1, Oil and Gas Handbook, Internal Revenue Manual.

[5] Section 1.482-1 of Internal Revenue Service regulations states that "a controlled [i.e., affiliated] transaction meets the arm's-length standard if the results of the transaction are consistent with the results that would have been realized if uncontrolled [i.e., unaffiliated] taxpayers had engaged in the same transaction under the same circumstances (arm's-length result). However, because identical transactions can rarely be located, whether a transaction produces an arm's-length result generally will be determined by reference to the results of comparable transactions under comparable circumstances." Source: 26 CFR 1, §1.482.1 (4/1/99 edition).

outlined below may therefore offer reliable information on the cost of pipeline services.

1. Third Party Transportation on Vastar: Some of the pipelines in which Vastar owns an interest transport oil for third parties. The rates paid for such arm's-length shipments on the same pipeline in virtually identical transactions provide an obvious and valid benchmark for the cost of affiliated transportation on the same pipelines. These unaffiliated shippers would be permitted by MMS to deduct this tariff as a transportation allowance in the calculation of their own royalty obligations. Other than a desire to increase MMS royalties, there cannot be any economic justification for permitting a transportation allowance equal to this rate for lessees other than Vastar, but not permitting it when Vastar performs the same transportation service for itself or its affiliate.

2. Non-Vastar Transportation Using the Same Physical Asset: Vastar co-owns many of its pipelines, and the co-owners own their shares in undivided joint interests. As such, Vastar establishes prices for its share of capacity in these pipelines, and the other owners establish prices for their share of capacity. The same service is being provided by all owners, however, and the transported crude is commingled. Tariffs paid in arm's-length transactions to these other, non-Vastar, pipeline owners are also valid benchmarks for the market price of the transportation service being provided on that particular pipeline. These shippers would be permitted by MMS to deduct this tariff as a transportation allowance in the calculation of their own royalty obligations. In all important respects, the transportation services being provided by non-Vastar owners are identical to the services being provided by Vastar to itself and its affiliates. Other than a

desire to increase MMS royalties, there cannot be any economic justification for permitting a transportation allowance equal to the tariff rate for lessees who purchase transportation at arm's length from other owners in the same pipeline, but not permitting it when Vastar uses its share of the capacity to perform the same transportation service for itself or its affiliates.

3. Tariff Information that Predates Vastar's Purchase: Prior to purchasing additional assets from Mobil in 1998, Vastar was already a producer in many of the areas in which it acquired these additional properties. In some cases, as a producer, Vastar relied on the Mobil pipeline assets to transport its crude. The fees paid for this transportation reflect arm's-length transactions, were accepted as valid for allowance purposes at the time, and would still be acceptable for that purpose today if the pipeline had not changed hands. The mere change of pipeline ownership does not change the cost of the services being rendered. Other than a desire to increase MMS royalties, there cannot be any economic justification for permitting a transportation allowance equal to this rate when Mobil owned the pipeline, but not permitting it now that Vastar owns the pipeline and provides the transportation service to itself or its affiliates.

4. Existing FERC- or State-Regulated Tariff Rates: Some of the pipelines in the Gulf of Mexico have in place tariff rates and structures approved by either state or federal regulatory agencies. To the extent that one of these agencies has determined in the past that such rates are just and reasonable, these rates ought to be sufficient for use as a proxy for a market transportation rate.

5. Third Party Rates on Comparable Pipelines: In addition to the six pipelines owned, in part, by Vastar, there are many other pipelines

located in the Gulf of Mexico that perform a very similar market function. The rates charged on pipelines in comparable market circumstances for arm's-length transactions are also valid benchmarks for the purpose of determining the cost of Vastar transportation services.

VI THE COST-OF-SERVICE ALTERNATIVE

In the absence of a market-price benchmark, a second best alternative is a regulatory "cost-of-service" approach. This approach consists of identifying all of the costs associated with providing a service and then setting a price for the service by allocating those costs across all units of production. This approach suffers, however, from a number of well known shortcomings, including high administrative burden, reduced efficiency incentives, lack of sufficient data, and an inability to respond appropriately to changes in underlying market conditions in a timely manner. Thus it makes sense that the IRS and other parties in analogous situations rely on comparable arm's-length transactions rather than attempt to determine "cost" based on accounting cost data.

If reliance is to be made on a cost-of-service approach, it is necessary to properly account for the actual costs of providing services. The MMS's current regulations violate this condition to the extent that they allow for an insufficient return on capital and provide no allowance for the income tax obligations of the pipeline company. Return on invested capital and income taxes are costs directly borne by pipelines and their investors. Failure to appropriately account for such costs will lead to a "cost" allowance that does not correspond to the economic cost of the transportation service.

The current regulatory allowance for return on capital, equal to the yield reported for S&P BBB bonds, does not correspond to the economic

cost of capital for a pipeline. Capital market forces will not permit the financing of an investment such as an offshore pipeline entirely on the basis of debt. Hence the economic cost of capital for this kind of investment must include an equity component. A standard approach to determining the cost of capital for investments financed by a blend of debt and equity is to estimate the project's weighted average cost of capital ("WACC"). Historically, BBB bond yields have been far below the WACC for companies owning assets in the Gulf.

In addition, income taxes are an unavoidable cost of running a pipeline system. Market forces determine the cost of capital, and market participants understand and expect that the return they earn will be net of the required income taxes. If the revenues from the investment do not include a component to cover those taxes, then the after-tax return earned by investors will be less than the market rate of return. Hence any disallowance of tax costs effectively constitutes a reduction in the level of return on the asset itself. This means that the assets needed to provide the transportation service would not be earning the cost of capital, and the transportation allowance would therefore be less than the economic cost of the transportation service.

VII CONCLUSION

The economic purpose of the transportation allowance is to calculate the value that would be obtained for a natural resource if the resource were sold in an arm's-length market transaction at the lease. This lease value is the downstream arm's-length price minus the market price for the transportation service. Hence the market price for the transportation service is the conceptually appropriate concept of "cost" for the purpose of calculating the transportation allowance. Where the actual transportation occurs via an affiliate, the appropriate concept

remains market price, but it is necessary to look to comparable arm's-length transactions to identify that market price. This principle is understood and accepted by other government entities that must determine the actual cost of goods or services procured from affiliates.

Attempting to determine the cost of transportation service on the basis of accounting cost data is more difficult, more time-consuming, less accurate, and less flexible than using comparable arm's-length transactions to calculate the market price. If this method is used, however, it must be carried out in a way that is conceptually appropriate for the determination of actual cost. This includes calculating the cost of capital in a way that is consistent with how capital markets actually operate. Such markets operate to require a mixture of debt and equity to finance pipeline investments, and to require that companies earn sufficient returns to pay the market cost of capital after paying all necessary taxes.

In the short run, the MMS might be able to increase its revenue by ignoring these economic principles and requiring transportation allowances below the true economic cost of transportation services. This would, however, effectively increase unilaterally the royalty rate, distort firms' decisions regarding affiliate transactions and vertical integration, and likely reduce future investment in the development of Gulf resources.